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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/829,434	04/22/2004	Matthew J. Fairlie	62-337	8764

20736 7590 11/09/2006

MANELLI DENISON & SELTER
2000 M STREET NW SUITE 700
WASHINGTON, DC 20036-3307

EXAMINER	
SODERQUIST, ARLEN	

ART UNIT	PAPER NUMBER
1743	

DATE MAILED: 11/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/829,434	FAIRLIE ET AL.	
	Examiner	Art Unit	
	Arlen Soderquist	1743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 October 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *25-27,29-31,36,38-43,45-61,63,64,66 and 82-128* is/are pending in the application.

4a) Of the above claim(s) *104-128* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *25-27,29-31,36,38-43,45-61,63,64,66 and 82-103* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. Applicant's election of Group I in the reply filed on October 29, 2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. The disclosure is objected to because of the following informalities: the continuing data should reflect the current status of the parent application.

Appropriate correction is required.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 25-27, 29-31, 36, 38-43, 45-61, 63-64, 66 and 82-103 are rejected under 35 U.S.C. 103(a) as obvious over Pritchard (US 5,592,028) in view of Takriti (US 6,021,402). In the patent Pritchard teaches a wind farm generation scheme utilizing electrolysis to create gaseous fuel for a constant output generator. In the device at least some of the power output is utilized to convert water into hydrogen, store and burn the hydrogen to produce energy, and use the energy from the burning for the generation of electricity. The means includes a plurality of electrolysis modules consisting of electrolytic cells connected in series, with at least two modules connected in parallel by a switch means. Figure 1 shows a wind farm (1, source of electric energy) which provides electrical power via a switch/transformer (2) to either the public utility grid (3) or an AC-DC converter/filter (4). Any resultant DC output of the wind farm after being suitably filtered by the AC-DC converter/filter, is fed to an electrolysis plant (5) where water is

split into hydrogen and oxygen. The hydrogen produced then through a pipe to a compressor (6) then into a purification plant (7) and then into hydrogen storage means (8). After passing into the hydrogen storage means, the hydrogen may pass from the storage means to a hydrogen combustion/electrical generation plant (20). Alternatively, the hydrogen may pass from the storage means through a purification/liquefaction plant (9) into long term storage means (10). The storage means should have sufficient capacity to accommodate short term variations in available wind energy (of the order of a few weeks). The long term storage means 10 should have sufficient capacity to accommodate seasonal variations. Outlet means (11) provide for delivery of liquid hydrogen. Outlet means at 12 provide for delivery of gaseous hydrogen. The electrical generation plant may incorporate means for burning hydrogen in air or stoichiometrically with oxygen. Various means of combustion may be employed. Non-limitative examples include a conventional steam boiler/steam turbine plant (21), direct generation of steam from the stoichiometric combustion of hydrogen with oxygen (22), an internal combustion engine (23), hydrogen gas turbine combustion (24) or a hydrogen fuel cell (25). All the means (21-25) would effect the turning of conventional electrical generating plant which would output electrical power to the grid. Figure 2 shows the electrolysis plant in more detail. The plant includes a number of voltage dependent switches (32) each connected to an electrolysis module (38) (a stack of electrolysis cells 35a, 35b . . . 35z connected in series). DC (+) current from the wind farm, smoothed by the filter is passed to a voltage dependent switch. The switch has a number of operating positions (34) and the switch includes control means arranged to cause it to adopt a particular position dependent on the voltage across it. The switch can be electro-mechanical or electronic such as a thyristor. In this case each cell of the module would be connected via a thyristor to the voltage supplied with only one thyristor open at a time to determine the number of cells operating, viz if the thyristor connected to the sixth cell is open the voltage is supplied to the first six cells. The electrolysis cells have an optimum operating voltage at which they operate with maximum efficiency. Depending on cell construction this optimum operating voltage is normally between 1.5 and 2.0 volts at room temperature. The voltage switch is arranged to ensure that each cell receives the correct voltage across it to ensure maximum efficiency by energizing the correct number of cells. For example if the voltage measured between the input and ground is 16 volts and the electrolysis cells have an optimum

operating voltage of 1.6 volts then the switch is arranged to automatically move to a position where the 16 volts is supplied across 10 electrolysis cells. Each of the 10 cells then has a voltage of 1.6 volts across it: if the measured voltage changed to 19 volts then the switch would move to energize a further two cells making a total of 12 energized cells, each of which would have a voltage of 1.58 volts (close to the optimum) across it. In the preferred embodiment, the transition between switch positions is done so as to avoid losses due to spike effects and the switch response time is matched to the temporal (real time) characteristics of the filter. Although not indicated in the figure, a means may be provided to monitor the current density through each module and thereby provide feedback to the switch control means (the control means is connected to the electricity generator and collects data that is used by the controller to control the switches). Column 4, lines 36-49 teach that the invention allows for much longer periodic smoothing of the wind energy availability curve. The result of this is to allow a more reliable design for wind farms based upon seasonal or annual mean wind speed figures. The invention will permit, in principle, wind energy to contribute up to a 100% of total grid power, limited only by the total energy available in the local wind regime. All electrolysis products are initially put into the various storage means, and the electrolysis plant is made capable of accepting any power input up to the maximum rated, power of the wind plant. This can greatly simplify the design of the wind energy conversion plant as complex electro/mechanical output control is unnecessary. The wind farm could be designed to produce DC, and therefore hydrogen, at all times and may never have a direct connection to the grid. Column 2, lines 37-38 teach that preferably the system includes control means to monitor (collect data) and control the system. This control means would have inherently been connected to the wind farm energy source to collect data as a part of its being able to monitor and control the system since reducing the power variation is the intended purpose. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the control means to monitor the electricity from the wind farm to be able to control the electrical generation plant when the power needs are not being met by the wind farm. Pritchard does not teach a more involved computer based control system.

In the patent Takriti teaches a computer implemented risk-management system schedules the generating units of an electric utility while taking into consideration power trading with other utilities and the stochastic load on the utility system. The system provides the user with a tool

that generates multiple load forecasts and allows the user to vary the fuel price between the different scenarios and the different periods of the planning horizon. The tool allows the user to model accurately the uncertain trading transactions and the changing fuel prices to meet the electric demand of customers at a minimal cost while making the maximum profit possible from power trading. The tool also allows the user to apply any set of linear constraints to fuels. A mathematical model of the problem is solved to provide the status of each generator at each time period of the planning horizon under each given scenario, the load on each generator during each period in which it is operating, an optimal fuel mix for each generating unit, and the prices for purchasing and selling power in the periods of the planning horizon. In the background given in columns 1-4, Takriti discusses the different types of electrical generating devices including boilers using steam to turn a turbine and quick start generators using fuel heating of air to turn the turbine and produce electricity. This section also discusses the difference in cost and operating efficiency of these types of electricity producers. Both the boiler and quick start types of electricity generators are found in the hydrogen combustion/electricity generation plant of Pritchard.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a control/risk management system as taught by Takriti into the Pritchard device /system because of the ability or predict the need for various inputs in combination with their cost, thereby reducing the cost/risk of operating the system as taught by Takriti since the Pritchard system included components for electricity generation that are included and controlled by the system of Takriti.

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 25-27, 29-31, 36, 38-43, 45-61, 63-64, 66 and 82-103 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-167 of U.S. Patent No. 6,745,105. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims are of a scope that the patented claims are within the instant claim scope and one cannot practice the patented invention without practicing the instant invention.

7. Applicant's arguments filed October 20, 2006 have been fully considered but they are not persuasive. In response to the argument that the combination of Prichard with Takriti is not proper examiner notes that the control of Takriti is intended to be applied to an electricity producing system that includes a number of different types of electricity producers. These include conventional boilers using a fuel source to heat water and create steam for driving a turbine to produce electricity and quick start generators using a fuel to directly heat air that drives a turbine to produce electricity. It is clear that the system of Pritchard includes a control system. It is also clear that the electricity generation in Pritchard includes conventional boilers and quick start type generators to generate electricity. Thus due to the expected differences in cost of production and requirements for startup as taught by Takriti for the different types of electricity generators, one of ordinary skill in the art would have recognized the need to use a controller such as taught by Takriti in the Pritchard system to optimize the cost of production and need to produce the energy among the different types of electricity generators present in the Pritchard system. As such there is a clear link between the two references and a clear benefit that would have motivated one of ordinary skill in the art to apply the risk management type of control system to the Pritchard system. It is noted that a terminal disclaimer was submitted. The terminal disclaimer has not been reviewed and examiner is maintaining the obviousness-type double patenting rejection. Acceptance of the terminal disclaimer will overcome this rejection.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited references deal with a power generating system using solar energy to generate hydrogen for storage.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arlen Soderquist whose telephone number is (571) 272-1265. The examiner can normally be reached on Monday-Thursday and Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Arlen Soderquist
Primary Examiner
Art Unit 1743